NC/PMC/YD/W1/2018-19/C1 Date: 17-12-2018

1. TEST REPORT ON CEMENT:

Sub: Testing of 53 Grade Cement Sample (IS 12269-1987).
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}
Ref.: Material testing/PMC/18-19,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

PHYSICAL TESTS ON CEMENT

Brand : ACC
Grade * : 53,
Type * : O.P.C

TABLE 1.1:

SL No	Name of Test	Test Results	Requirements as per IS 8112-1989
1	Initial setting time	155 min	Shall not be less than 30 min
2	Final setting time	265 min	Shall not be more than 600 min
3	Fineness (by dry sieving on IS 90 micron sieve)	1.45 %	Not to exceed 10.0%
4	Soundness test(by Le-Chatelier's method)	1.65 mm	Shall not be more than 10 mm
5	Compressive strength a) 3 days (average of three results) b) 7 days (average of three results)	28.05 N/Sq mm 40.15 N/Sq mm	Shall not be less than 27 N/Sqmm Shall not be less than 37N/Sqmm

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Page No. 1/1,

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NC/PMC/YD/W1/2018-19/PCC1 Date: 17-12-2018

1. TESTING OF COARSE AND FINE AGGREGATES:

Sub: Testing of Coarse and Fine aggregates to be used for bed concrete.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

1. COARSE AGGRGATES TABLE - SIEVE ANALYSIS:

IS Sieve Size, mm	Percentage passing	Requirements as per IS 383-1970 (Reaffirmed on 2007) % Passing	
	40 mm Sample	Single size	Graded
40mm	100.00	85-100	90 – 100
20mm	68.25	0 -20	30- 70
10mm	25.10	0 -5	10- 35
4.75mm	2.10	------	0- 5

2. FINE AGGREGATES TABLE - SIEVE ANALYSIS

IS Sieve Size, mm	Percentage Passing	Specification as Per IS: 383-1970(Reaffirmed 2002) Percentage Passing			Remarks
		Zone-I	Zone-II	Zone -III	
04.75	97.35	90-100	90-100	90-100	The Sample Conforms to Grading **Zone-II**
02.36	89.25	60-95	75-100	85-100	
01.18	75.15	30-70	55-90	75-100	
600.mic	44.10	15-34	35-59	60-79	
300.mic	26.80	5-20	8-30	12-40	
150.mic	7.05	0-10	0-10	0-10	

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NC/PMC/YD/W1/2018-19/C2

Date: 19-12-2018

1. TEST REPORT ON CEMENT:

Sub: Testing of 53 Grade Cement Sample (IS 12269-1987).

{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

PHYSICAL TESTS ON CEMENT

Brand : ACC
Grade * : 53,
Type * : O.P.C

TABLE 1.1:

SL No	Name of Test	Test Results	Requirements as per IS 8112-1989
1	Initial setting time	145min	Shall not be less than 30 min
2	Final setting time	265 min	Shall not be more than 600 min
3	Fineness (by dry sieving on IS 90 micron sieve)	1.95 %	Not to exceed 10.0%
4	Soundness test(by Le-Chatelier's method)	1.25 mm	Shall not be more than 10 mm
5	Compressive strength a) 3 days (average of three results) b) 7 days (average of three results)	28.85 N/Sq mm 39.48 N/Sq mm	Shall not be less than 27 N/Sqmm Shall not be less than 37N/Sqmm

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NC/PMC/YD/W1/2018-19/FA1 Date: 19-12-2018

1. TESTING OF FINE AGGREGATES :

Sub: Testing of Fine Aggregates.

{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TABLE - 1.1 : SIEVE ANALYSIS

IS Sieve Size,mm	Percentage Passing	Specification as Per IS. 383-1970(Reaffirmed 2002) Percentage Passing			Remarks
		Zone-I	Zone-II	Zone –III	
04.75	97.35	90-100	90-100	90-100	The Sample Conforms to Grading Zone-II
02.36	87.25	60-95	75-100	85-100	
01.18	77.15	30-70	55-90	75-100	
600 mic	48.90	15.34	35-59	60-79	
300 mic	23.05	5-20	8-30	12-40	
150 mic	7.45	0-10	0-10	0-10	

TABLE 1.2 ;

Sl No	Test Conducted	Sample	Results	Requirements as Per IS. Specification IS :383-1970 (Reaffirmed 2002)
1	Bulking of Sand	001	15.25%	-----
2	Silt Content	----	0.56%	Not more than 8%
3	Specific Gravity	----	2.62	-------

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NC/PMC/YD/W1/2018-19/CA1 Date: 19-12-2018

1. TESTING OF COARSE AGGREGATES (20 mm):

Sub: Testing of Construction Materials.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division }
Ref.: Material testing/PMC/18-19,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

Table - 1.1 : SIEVE ANALYSIS :

IS Sieve Size, mm	Percentage passing	Requirements as per IS 383-1970 (Reaffirmed on 2002) % Passing	
	20 mm Sample	Single size	Graded
40 mm	100.00	100.00	100.00
20 mm	97.35	85-100	90 - 100
10 mm	45.20	0 - 20	25 - 55
4.75 mm	4.05	0 - 5	0 - 10

TABLE 1.2 :

SL No	Test conducted	Results	Requirements as per IS 383-1970 & Tests Conforms to IS 2386(Part I to IV) – 1963 (Reaffirmed on 2002)
1.	Flakiness Index	24.36 %	Not to exceed 25 %
2.	Crushing value	26.89 %	Not to exceed 45 % for concrete other than for wearing surfaces and 30% for concrete for wearing surfaces

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NC/PMC/YD/W1/2018-19/S1

Date: 19-12-2018

1. TEST REPORT ON REINFORCEMENT STEEL:

Sub: Testing of Reinforcement Steel of diameter 10 & 12mm **TMT Steel.**
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}
Ref.: Material testing/PMC/18-19,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TABLE – 1

SL No	Details	For 10 mm		For 12 mm	
		Test Results	Min Req as per IS 1786-2008	Test Results	Min Req as per IS 1786-2008
01	Observed diameter of bar	**10.0 mm**	10.0 mm	**12.0 mm**	12.0 mm
02	Observed Wt/m Length **Kg/m**	**0.623**	0.567	**0.889**	0.834
03	Proof stress/Yield stress, fy , **N/mm²**	**545.0**	500.0	**548.0**	500.0
04	Bend/ Re bend Test	**Ok**	---	**Ok**	---
05	Percentage of Elongation, %	**20.70**	12.00	**19.70**	12.00
06	Ultimate Tensile Strength **N/mm²**	**641.0**	545.0	**646.0**	545.0

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NC/PMC/YD/W1/2018-19/CB1 Date: 29-12-2018

1. TEST REPORT ON CEMENT CONCRETE CUBES:

Sub: Testing of Concrete Cubes (for 07days Compressive Strength).
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}
Ref.: Material testing/PMC/18-19,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

RESULTS OF COMPRESSIVE STRENGTH ON CEMENT CONCRETE

CUBE SPECIMENS

Dimensions of Specimen : 150 X 150 X 150mm
Grade of Concrete* : M_{20}

TABLE 1.1:

Sl No	Location/ Identification*	Date of Casting*	Date of Testing	Age in Days	C/S Area in mm^2	Maximum Load in K.N	Compressive Strength (N/mm^2)	Avg. Value
1	001	22-12-18	29-12-18	07	22500	390	17.33	16.96
	002	"	"	"	"	380	16.89	
	003	"	"	"	"	375	16.67	

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NC/PMC/YD/W1/2018-19/CB1a

Date: 19-01-2019

1. TEST REPORT ON CEMENT CONCRETE CUBES:

Sub: Testing of Concrete Cubes (for 28days Compressive Strength).
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

RESULTS OF COMPRESSIVE STRENGTH ON CEMENT CONCRETE

CUBE SPECIMENS

Dimensions of Specimen : 150 X 150 X 150mm

Grade of Concrete* : M_{20}

TABLE 1.1:

Sl No	Location/ Identification*	Date of Casting*	Date of Testing	Age in Days	C/S Area in mm^2	Maximum Load in K.N	Compressive Strength (N/mm^2)	Avg. Value
1	001	22-12-18	19-01-19	28	22500	490	21.78	22.30
	002	"	"	"	"	510	22.67	
	003	"	"	"	"	505	22.44	

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NC/PMC/YD/W1/2018-19/G1 Date: 24-12-2018

TEST REPORT ON GRANULAR SUBBASE MIX
(GRADATION TEST)

Sub: To conduct tests on GSB (with close graded materials, Grade-II) mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}
Ref.: Material testing/PMC/18-19,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. **Gradation Test:**
TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
26.50	98.35	70-100
9.50	67.20	50-80
4.75	56.40	40-65
2.36	46.25	30-50
0.425	13.90	10-15
0.075	4.05	<5

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NC/PMC/YD/W1/2018-19/G2 Date: 26-12-2018

TEST REPORT ON GRANULAR SUBBASE MIX
(GRADATION TEST)

Sub: To conduct tests on GSB (with close graded materials, Grade-II) mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}
Ref.: Material testing/PMC/18-19,
Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.
Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. **Gradation Test:**
TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
26.50	96.35	70-100
9.50	65.90	50-80
4.75	55.25	40-65
2.36	41.05	30-50
0.425	12.65	10-15
0.075	3.95	<5

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NC/PMC/YD/W1/2018-19/W1 Date: 28-12-2018

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	98.45	95-100
26.50	—	-
22.40	76.35	60-80
11.20	54.20	40-60
4.75	38.15	25-40
2.36	27.45	15-30
0.600	18.90	8-22
0.075	4.60	0-5

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NC/PMC/YD/W1/2018-19/W2 Date: 29-12-2018

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	98.35	95-100
26.50	---	-
22.40	76.25	60-80
11.20	49.10	40-60
4.75	36.90	25-40
2.36	27.10	15-30
0.600	17.80	8-22
0.075	3.85	0-5

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NC/PMC/YD/W1/2018-19/W3 Date: 31-12-2018

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	98.45	95-100
26.50	---	-
22.40	75.10	60-80
11.20	57.15	40-60
4.75	36.80	25-40
2.36	24.60	15-30
0.600	18.45	8-22
0.075	3.75	0-5

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NC/PMC/YD/W1/2018-19/W4 Date: 02-01-2019

TEST REPORT ON WET MIX MACADAM MIX

(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	96.90	95-100
26.50	---	-
22.40	75.25	60-80
11.20	45.10	40-60
4.75	33.45	25-40
2.36	23.90	15-30
0.600	19.75	8-22
0.075	4.65	0-5

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NC/PMC/YD/W1/2018-19/W5 Date: 03-01-2019

TEST REPORT ON WET MIX MACADAM MIX
(GRADATION TEST)

Sub: To conduct Gradation test on Wet Mix Macadam (WMM) Mix.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

1. Gradation Test:

TABLE 1.1

Sieve Size mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Specified Limits as per MoRTH Specifications, V Revision-2013
53.00	100.00	100
45.00	97.35	95-100
26.50	---	-
22.40	76.25	60-80
11.20	56.90	40-60
4.75	32.70	25-40
2.36	25.65	15-30
0.600	15.30	8-22
0.075	4.25	0-5

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NC/PMC/YD/W1/2018-19/BD1 Date: 05-01-2019

1. TEST REPORT ON BITUMEN SAMPLE:

Sub: Testing of Bitumen sample VG-30 Grade.

{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

Technical Reference: Ministry of Road Transport and Highways, V Revision, 2013 and IS 73: 1992.

TABLE 1.1 ;

SL No	Details	Test Results	Requirements as per I.S 73 –1992 Specifications
1.	Penetration at 25^0 C	**54.0**	Min. 45
2.	Ductility Value at 25^0 C	**109.30cm**	40
3.	Flash point	**238^0 C**	Minimum 220^0 C
4.	Softening point	**53.0^0 C**	Min. 47

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NC/PMC/YD/W1/2018-19/CD1 Date: 05-01-2019

1. TEST REPORT ON COARSE AGGREGATE:

Sub: Testing of Coarse Aggregate used in Dense Graded Bituminous Macadam.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TABLE 1.1 ;

SL No	Test conducted	Test Results	Tests Conforms to IS 2386(Part I to IV)– 1963 (Reaffirmed on 2002) & Requirements as per IS 383-1970 & M.o R.T H Specification, V Revision -2013.
1.	Aggregate Impact Value	**26.16%**	Not more than 27.00 % for DBM
2.	Combined Flakiness and Elongation index, %	**28.15%**	Not more than 35.0 %
3.	Water absorption, %	**0.38%**	Not more than 2.0 %
4.	Specific gravity	**2.62**	------
5.	Soundness	**6.76 %**	Max. 12 % in Sodium Sulphate

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NC/PMC/YD/W1/2018-19/DBM1 Date: 07-01-2019

1.TEST REPORT ON BITUMINOUS MIXES :
(BITUMEN EXTRACTION TEST & GRADATION TEST)

Sub: To determine the percentage of bitumen and gradation for DBM mix sample.
{Project*: Improvement to roads and drains at Maruthinagara, Papanna Badavane balance main and cross roads in Ward no-01, Yelahanka sub division.}

Ref.: Material testing/PMC/18-19,

Report Required for: Assistant Executive Engineer,
Yelahanka Sub Division,
BBMP, Bangalore.

Name of the Agency/Contractor*: Technical Manager (West), KRIDL.

TEST RESULTS

A. Type of Construction : **Dense Graded Bituminous Macadam.**

1. The bitumen content obtained after subjecting the sample for Bitumen Extraction test = **4.51 %**

2. **Gradation Test**

TABLE 1.1

Sieve Size, mm	Percent by Weight passing the Sieve from the sample supplied (Obtained Gradation)	Gradation requirement as per Table 500-10 of MORTH Specfications-2013 DBM (Grading - 2)
37.5	100	100
26.5	96.35	90-100
19.0	86.20	71-95
13.20	71.90	56-80
4.75	45.70	38-54
2.36	38.25	28-42
0.300	18.45	7-21
0.075	7.05	2-8

AE

AE-1
A.E.E

KIRAN. R
M.E, (Civil-Engg)

For Newzen Consultants Bangalore
Proprietor

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